Having thus described my invention, I claim:

1. A counter-flow aggregate dryer for an asphalt plant, said dryer comprising:

a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first and second zones, with each said zone having first and second ends;

a support framework carrying said cylinder in a substantially horizontal orientation;

a drive motor mounted on said framework and engaged with said cylinder to rotate said cylinder about the central longitudinal axis thereof;

a primary aggregate feeder with a material discharge extending within said first end of said cylinder to deliver aggregate material to said first zone of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first and second zones, to said second end of said cylinder;

a burner mounted adjacent said second end of said cylinder to generate a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone; and

a secondary feeder to introduce material directly within said second zone of said cylinder.

2. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 1, wherein said first zone comprises a heating and drying zone with a plurality of veiling flights mounted on the interior surface of said cylinder within said first zone to transport aggregate material from said first end of said first zone to said second end of said first zone and to create a curtain of falling aggregates

in said internal passageway with rotation of said cylinder, wherein said hot gas stream flows through the curtain of falling aggregates to heat and dry the aggregate material.

3. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 1, wherein said second zone comprises a combustion zone with a plurality of nonveiling flights mounted on the interior surface of said cylinder within said second zone to transport aggregate material from said first end of said second zone to said second end of said second zone, but to prevent aggregate material from forming a curtain of falling aggregates within said combustion zone with rotation of said cylinder and to shield said material from direct radiant heat from the combustion zone.

4. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 3, wherein said secondary feeder includes a collar circumscribing said cylinder and openings through said cylinder in registry with said collar whereby material is introduced intermediate said first and second ends of said combustion zone, being transported by said nonveiling flights to said second end of said combustion zone but prevented from falling through the hot gas stream generated in said combustion zone and shielded from direct radiant heat from the combustion zone.

5. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 4, wherein said secondary feeder introduces recycle asphalt material, virgin aggregate material or both recycle asphalt material and virgin aggregate material intermediate said first and second ends of said combustion zone.

6. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 1 further comprising a secondary burner mounted adjacent said first end of said cylinder in contact with said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

7. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 6 further comprising a temperature controller connected to said secondary burner to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

8. A counter-flow aggregate dryer for an asphalt plant, said dryer comprising:

a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first and second zones, with each said zone having first and second ends;

a support framework carrying said cylinder in a substantially horizontal orientation;

a drive motor mounted on said framework and engaged with said cylinder to rotate said cylinder about the central longitudinal axis thereof;

a primary aggregate feeder with a material discharge extending within said first end of said cylinder to deliver aggregate material to said first zone of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first and second zones, to said second end of said cylinder;

a burner mounted adjacent said second end of said cylinder to generate a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate

material within said first zone; and

a secondary burner mounted adjacent said first end of said cylinder in contact with said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

9. The counter-flow aggregate dryer for an asphalt plant as set forth in Claim 8 further comprising a temperature controller connected to said secondary burner to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

10. A counter-flow drum mixer for producing an asphaltic composition from asphalt and aggregates, said mixer comprising:

a rotatable cylinder having first and second open ends with an internal passageway communicating therebetween and having first, second and third zones, with each said zone having first and second ends;

a support framework carrying said cylinder in a substantially horizontal orientation;

a drive motor mounted on said framework and engaged with said cylinder to rotate said cylinder about the central longitudinal axis thereof;

an aggregate feeder with a material discharge extending within said first end of said cylinder to deliver aggregate material to said first zone of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first, second and third zones, to said second end of said cylinder;

a burner mounted adjacent said second end of said second zone to generate a hot gas stream

in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone;

a secondary feeder to introduce material directly within said second zone of said cylinder;

liquid asphalt feed means disposed within said third zone of said cylinder for delivering liquid asphalt thereto to form an asphaltic composition; and

discharge means for directing said asphaltic composition from said second zone of said cylinder.

11. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 10, wherein said first zone comprises a heating and drying zone with a plurality of veiling flights mounted on the interior surface of said cylinder within said first zone to transport aggregate material from said first end of said first zone to said second end of said first zone and to create a curtain of falling aggregates in said internal passageway with rotation of said cylinder, wherein said hot gas stream flows through the curtain of falling aggregates to heat and dry the aggregate material.

12. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 10, wherein said second zone comprises a combustion zone with a plurality of nonveiling flights mounted on the interior surface of said cylinder within said second zone to transport aggregate material from said first end of said second zone to said second end of said second zone, but to prevent aggregate material from forming a curtain of falling aggregates within said combustion zone with rotation of said cylinder and to shield said material from direct radiant heat from the flame in

the combustion zone.

13. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 12, wherein said secondary feeder includes a collar circumscribing said cylinder and openings through said cylinder in registry with said collar whereby material is introduced intermediate said first and second ends of said combustion zone, being transported by said nonveiling flights to said second end of said combustion zone but prevented from falling through the hot gas stream generated in said combustion zone and shielded from direct radiant heat from the flame in the combustion zone.

14. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 13, wherein said secondary feeder introduces recycle asphalt material, virgin aggregate material or both recycle asphalt material and virgin aggregate material intermediate said first and second ends of said combustion zone.

15. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 10 further comprising a secondary burner mounted adjacent said first end of said cylinder in contact with said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

16. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 15 further comprising a temperature controller connected to said secondary burner to maintain said

discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

17. A counter-flow drum mixer for producing an asphaltic composition from asphalt and aggregates, said mixer comprising:

a rotatable cylinder having first and second open ends with an internal passageway communicating therebetween and having first, second and third zones, with each said zone having first and second ends;

a support framework carrying said cylinder in a substantially horizontal orientation;

a drive motor mounted on said framework and engaged with said cylinder to rotate said cylinder about the central longitudinal axis thereof;

an aggregate feeder with a material discharge extending within said first end of said cylinder to deliver aggregate material to said first zone of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first, second and third zones, to said second end of said cylinder;

a burner mounted adjacent said second end of said cylinder to generate a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone; and

a secondary burner mounted adjacent said first end of said cylinder in contact with said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

18. The counter-flow drum mixer for producing an asphaltic composition as set forth in Claim 17 further comprising a temperature controller connected to said secondary burner to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

19. A method for continuously drying and heating aggregate for an asphalt plant, the steps of said method comprising:

orienting in a substantially horizontal attitude a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first and second zones, with each said zone having first and second ends;

rotating said cylinder;

delivering primary aggregate material to the first end of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first and second zones, to said second end of said cylinder;

generating a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone;

introducing secondary material directly within said second zone of said cylinder whereby rotation of said cylinder transports said secondary material through said second zone to said second end of said cylinder; and

discharging said primary and secondary materials from said second end of said cylinder.

20. The method as set forth in claim 19, including the steps of creating a curtain of falling aggregate material within said first zone of said cylinder and flowing said hot gas stream through said curtain of falling aggregates to heat and dry the aggregate material.

21. The method as set forth in claim 19, including the steps of preventing material from forming a curtain of falling material within said second zone of said cylinder and shielding said material from direct radiant heat from the flame in the combustion zone.

22. The method as set forth in claim 19 wherein said delivering step comprises delivering virgin aggregate material to the first end of said cylinder and said introducing step comprises introducing recycle asphalt material, virgin aggregate material or both recycle asphalt material and virgin aggregate material to said second zone of said cylinder.

23. The method as set forth in claim 19, including the step of heating said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

24. The method as set forth in claim 23, including the steps of sensing the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment and controlling said heating step to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

25. A method for continuously drying and heating aggregate for an asphalt plant, the steps of said method comprising:

orienting in a substantially horizontal attitude a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first and second zones, with each said zone having first and second ends;

rotating said cylinder;

delivering primary aggregate material to the first end of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first and second zones, to said second end of said cylinder;

generating a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone;

heating said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment; and

discharging said primary and secondary material from said second end of said cylinder.

26. The method as set forth in claim 25, including the steps of sensing the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment and controlling said heating step to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

27. A method for continuously producing an asphaltic composition from asphalt and aggregates, the steps of said method comprising:

orienting in a substantially horizontal attitude a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first, second and third zones, with each said zone having first and second ends;

rotating said cylinder;

delivering primary aggregate material to the first end of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first, second and third zones, to said second end of said cylinder;

generating a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone;

introducing secondary material directly within said second zone of said cylinder whereby rotation of said cylinder transports said secondary material through said second and third zones, to said second end of said cylinder;

isolating said third zone of said cylinder from said hot gas stream;

mixing said primary aggregate material and said secondary material with liquid asphalt within said third zone isolated from said hot gas stream to produce an asphaltic composition; and

discharging said asphaltic composition from said second end of said cylinder.

28. The method as set forth in claim 27, including the steps of creating a curtain of falling aggregate material within said first zone of said cylinder and flowing said hot gas stream through

said curtain of falling aggregates to heat and dry the aggregate material.

29. The method as set forth in claim 27, including the steps of preventing material from forming a curtain of falling material within said second zone of said cylinder and shielding said material from direct radiant heat from the combustion zone.

30. The method as set forth in claim 27 wherein said delivering step comprises delivering virgin aggregate material to the first end of said cylinder and said introducing step comprises introducing recycle asphalt material, virgin aggregate material or both recycle asphalt material and virgin aggregate material to said second zone of said cylinder.

31. The method as set forth in claim 27, including the step of heating said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment.

32. The method as set forth in claim 31, including the steps of sensing the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment and controlling said heating step to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.

33. A method for continuously producing an asphaltic composition from asphalt and aggregates, the steps of said method comprising:

orienting in a substantially horizontal attitude a rotatable cylinder having first and second ends with an internal passageway communicating therebetween and having first, second and third zones, with each said zone having first and second ends;

rotating said cylinder;

delivering primary aggregate material to the first end of said cylinder whereby rotation of said cylinder transports said aggregate material from said first end of said cylinder, through said first, second and third zones, to said second end of said cylinder;

generating a hot gas stream in said second zone of said cylinder to flow toward said first end of said cylinder in a countercurrent direction to the flow of aggregate material within said cylinder in order to heat and dry the aggregate material within said first zone;

heating said hot gas stream discharged from the first end of said cylinder to elevate the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment;

isolating said third zone of said cylinder from said hot gas stream;

mixing said aggregate material with liquid asphalt within said third zone isolated from said hot gas stream to produce an asphaltic composition; and

discharging said asphaltic composition from said second end of said cylinder.

34. The method as set forth in claim 33, including the steps of sensing the temperature of said discharged hot gas stream prior to delivery to air pollution control equipment and controlling said heating step to maintain said discharged hot gas stream prior to delivery to air pollution control equipment above its dew point temperature.